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PRELIMINARY ANALYSIS  
OF AN  
INTEGRATED LOGISTICS SYSTEM  
FOR  
OSSA PAYLOADS

N88-19479

Volume II

OSSA Integrated Logistics Support  
Strategy

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## 1.0 INTRODUCTION

### 1.1 PURPOSE

The purpose of this document is to outline an Office of Space Science and Applications (OSSA) Integrated Logistics Support (ILS) strategy that will insure effective logistics support of OSSA payloads at an affordable life-cycle cost.

### 1.2 SCOPE

The provisions of this document apply to the Office of Space Science and Applications, all payload programs under their auspices, and contractors having management and/or technical responsibility for OSSA programs.

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## 2.0 LOGISTICS STRATEGY

### 2.1 GENERAL

The strategy for integrating OSSA logistics requirements will be to establish an OSSA Integrated Logistics Support Program. Full understanding, concise planning, and common policy and direction for OSSA programs are required to achieve a cost and operationally effective integrated logistics support program. Key to establishing a meaningful logistics program is the initial activity involving the development and communication of basic logistics policies, plans and procedures. These activities form the foundation and provide the common guidance for all OSSA Payload Program Managers in the planning, analyzing, designing, and supplying of logistics services and support resources. The resulting active participation and full communication assures the development of effective interfaces and working relationships, a common base of understanding across OSSA, identification and development of the most cost effective approach, and responsive implementation of requirements.

Specific policies, plans and procedures that will be developed to establish an OSSA Integrated Logistics Support Program are described in Section 4 of this document. The policies, plans, and procedures will be developed through a series of logistics studies and analyses. The results of the studies and analyses will be documented in an OSSA Logistics Plan.

## 2.2 OBJECTIVES

The objectives of the OSSA logistics strategy are as follows:

- a. Minimize system support and life cycle costs for OSSA payloads.
- b. Establish an OSSA integrated logistics system responsive to the support of payload design, development and operations.
- c. Integrate logistics across the various OSSA payload programs to ensure that each payload's logistics requirements can be effectively merged into a single OSSA logistics system.
- d. Assure visibility at OSSA level over all major logistics activities and resources within the payload programs.
- e. Assure that logistics is considered in early design activities to ensure long-term program supportability.
- f. Assure acquisition of only those materials, equipment and services necessary by optimizing the use of existing facilities, equipment, capabilities, and hardware from other programs.
- g. Ensure the timely availability of required equipment, materials, and services within budget limitations.
- h. Assure communication and coordination among OSSA programs, other NASA program offices, and other applicable agencies.

## 2.3 ORGANIZATION

The establishment and implementation of an OSSA Integrated Logistics Support Program will require the establishment of a functional OSSA ILS organization. Figure 2-1 portrays the organizational relationships for management of OSSA logistics activities. General responsibilities for accomplishment of these activities are outlined below.

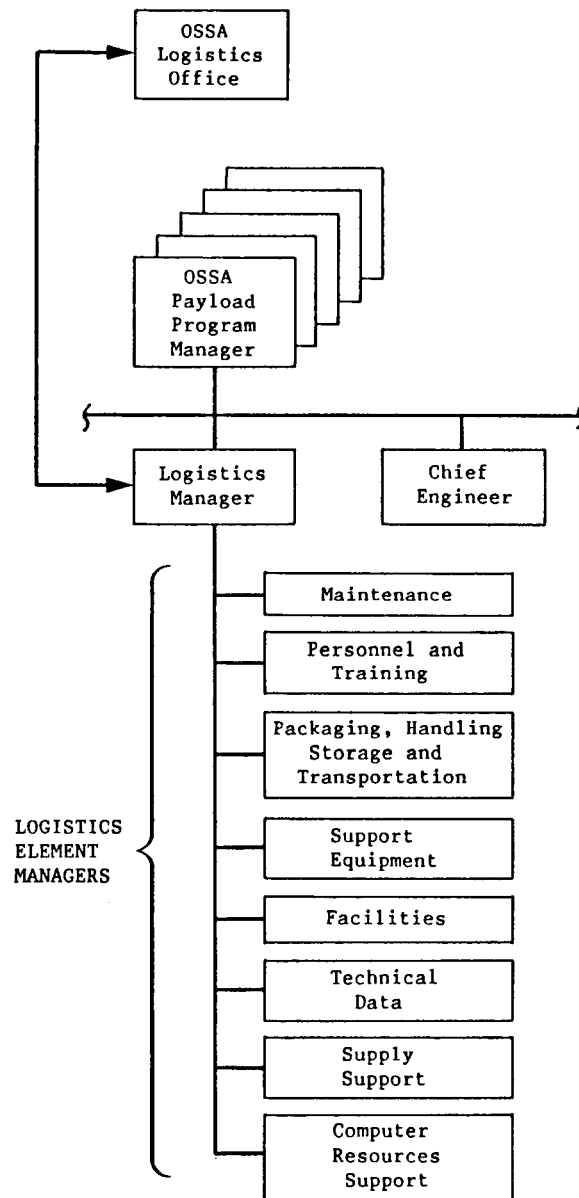


Fig. 2-1 Logistics Organization

### 2.3.1 OSSA

OSSA is responsible for development of an integrated logistics system and for managing the integration of OSSA payload program logistics activities. OSSA will coordinate the identification of management level logistics interface points for each organization, including the payload programs, other NASA programs and other applicable logistics organizations. Interfaces established will be the points of contact for overall integration of logistics. This responsibility includes the following:

- a. The development and implementation of an OSSA Integrated Logistics Support Program which includes development and implementation of logistics policies, plans, procedures, guidelines, and requirements.
- b. The establishment of a logistics office to integrate and coordinate all logistics matters. This includes interfaces with payload programs and other NASA Program Offices.
- c. The review of payload program logistics plans for compliance with program requirements.
- d. Establish an Integrated Logistics Working Group (ILWG) to develop and coordinate requirements and resolve problems concerning the ability of payload programs to implement OSSA logistics policies and procedures.
- e. Maintain visibility over major logistics activities and resources within the payload programs.
- f. Measure the effectiveness of the implementation of the ILS strategy and program throughout OSSA.
- g. Review and approve logistics budgetary requirements.

### 2.3.2 Payload Programs

Payload Program Managers will:

- a. Ensure that OSSA logistics policies, plans, procedures, guidelines and requirements are implemented.
- b. Establish a logistics function to integrate and coordinate all logistics matters to include interfaces with OSSA and other payload programs.
- c. Provide logistics plans to OSSA for review.
- d. Assure that logistics has the responsibility of concurrence on all design review and approval processes.
- e. Participate in the OSSA Integrated Logistics Working Group (ILWG).
- f. Assess the effectiveness of the Integrated Logistics Support Program.

### 3.0 IMPLEMENTATION

#### 3.1 GENERAL

Implementation of the OSSA logistics strategy will result in the establishment of an integrated logistics support program for OSSA.

Implementation of the OSSA logistics strategy will require conducting logistics analyses, identifying standard logistics procedures, sharing and developing logistics support resources, and establishing programs to reduce the demand for logistics support resources. Because each OSSA program is unique, with different requirements, and in different stages of development, the logistics programs cannot be implemented in the same manner for all programs. The special program characteristics and stage of development will be considered when establishing a logistics program. The strategy will be implemented in phases, with the final objective being a standardized, integrated logistics program within OSSA and across all NASA programs. This integrated logistics program will be able to provide optimum logistics support at minimum cost.

Implementation of the OSSA logistics strategy will occur in phases. In addition, implementation is time sensitive.

Implementation will begin as soon as possible to maximize logistics interfaces and resource sharing between OSSA and the Space Station Program.



The implementation of the OSSA logistics strategy will be supported by the issuance of an OSSA logistics policy letter and the formation of an OSSA level logistics office. Figure 3-1 shows the phased implementation of the OSSA logistics strategy.

### 3.2 PHASE I

The first phase of implementation of the OSSA logistics strategy is a data collection and analysis phase. It will be necessary to collect and analyze data on all the logistics procedures, programs, systems, and resources that are currently in use within OSSA, other NASA programs, and other applicable agencies. Establishing logistics interfaces across OSSA/NASA will be essential to the successful completion of this phase. The analysis will determine the best, most efficient, cost effective logistics program for OSSA. The analysis will also include evaluation of new logistics support concepts. Included in this analysis will be an evaluation of the logistics procedures, programs, systems, and resources that the Space Station Program plans to use. Due to the many OSSA/SSP logistics interfaces, it is essential that the logistics programs are complementary. This analysis will lead to the choice of standard logistics procedures, programs, systems, and resources to be implemented across OSSA programs. Specific procedures, programs, systems, and resources to be analyzed are identified and described in Section 4 of this document.

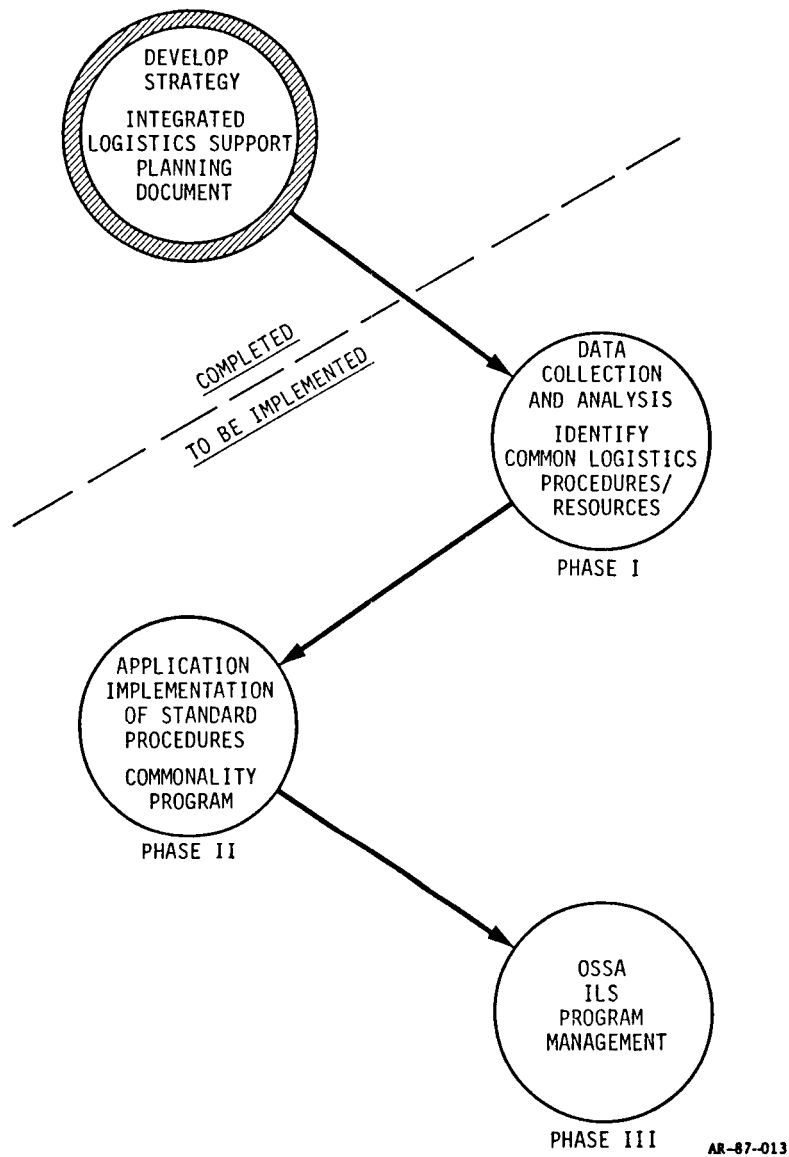


Fig. 3-1 ILS Strategy Implementation Phases

### 3.3 PHASE II

The second phase of implementing the OSSA logistics strategy will be application of the standard procedures, programs, systems and resources across all OSSA programs. Application to new programs will involve tailoring the standards to the unique characteristics of the payload. Application of the standards to payloads with existing procedures, programs, systems and resources will involve an analysis to determine which standards can be cost effectively integrated into the program to improve logistics support capabilities at a reduced life-cycle cost. In both cases, it will be necessary to analyze the impact of the application of the standards to the payload program.

### 3.4 PHASE III

The final phase of implementation will involve maintaining the standard, integrated OSSA logistics program. This phase will be continuous and will consist of the following activities:

- o Provide logistics advice/guidance to payload programs.
- o Review and evaluate payload program logistics plans and programs.
- o Conduct logistics cost analysis and budgeting.
- o Review and upgrade logistics procedures, programs, plans, systems and resources.
- o Review payload program logistics reports/data through the LIS.
- o Conduct/attend logistics reviews and working group meetings.
- o Represent the consolidated OSSA logistics interests/requirements.

- o Integrate the various payload commonality programs and manage the OSSA commonality program.
- o Oversee the development and operation of the consolidated logistics facility.

## 4.0 COMMONALITY

### 4.1 GENERAL

Commonality is defined as the use of identical or similar hardware, software, standards, and technical approaches to satisfy multiple sets of functionally similar requirements.

The key to development and implementation of an efficient, cost-effective OSSA Integrated Logistics Support Program is the definition and establishment of common logistics policies, plans, procedures, and support resources within OSSA and other NASA organizations. Commonality within the OSSA logistics program will start with the development of standard procedures for the Logistics Support Analysis (LSA) of all OSSA payloads. LSA is a set of systematic and comprehensive analyses performed during the conceptual, design, and development phases of a program to identify support criteria and operational support system resources. The LSA process is the technical driving force for an ILS program. The LSA process is a major contributor to the optimization of system logistics and maintenance support requirements and resources and provides justification and source data for the acquisition of support equipment, spares, repair parts, consumables, technical data, support facilities, tools, personnel, and training. LSA is performed in conjunction with design, and interacts with and supports other functional areas to ensure commonality of analysis and nonduplication of effort.

The remainder of this section addresses subordinate logistics areas that will be analyzed and developed for commonality application. Results of logistics studies and analyses will be documented in an OSSA Logistics Plan. Figure 4-1 shows the logistics commonality program interface between OSSA and the payload programs.

#### 4.2 LOGISTICS SUPPORT PLANS

OSSA will require, and provide guidance for, the preparation of OSSA payload program logistics support plans. In addition, a review loop at OSSA will be established for these plans. OSSA will formulate a policy statement to implement the requirement for these plans. The guidance for developing an Integrated Logistics Support Plan (ILSP) is contained in the Integrated Logistics Support Planning Document that is Volume III of this study.

The ILSP is the key logistics document that provides the common direction and control required to meet the logistical needs of payload programs. The ILSP addresses all logistics elements, to include: maintenance; technical data and documentation; supply support; logistics facilities; packaging, handling, storage, and transportation; logistics support personnel and training; support equipment; and the logistics information system. These logistics elements will be developed in greater detail through preparation of separate logistics plans for each element. Logistics procedures that are developed through special studies and analyses will be documented in the appropriate logistics support plan.

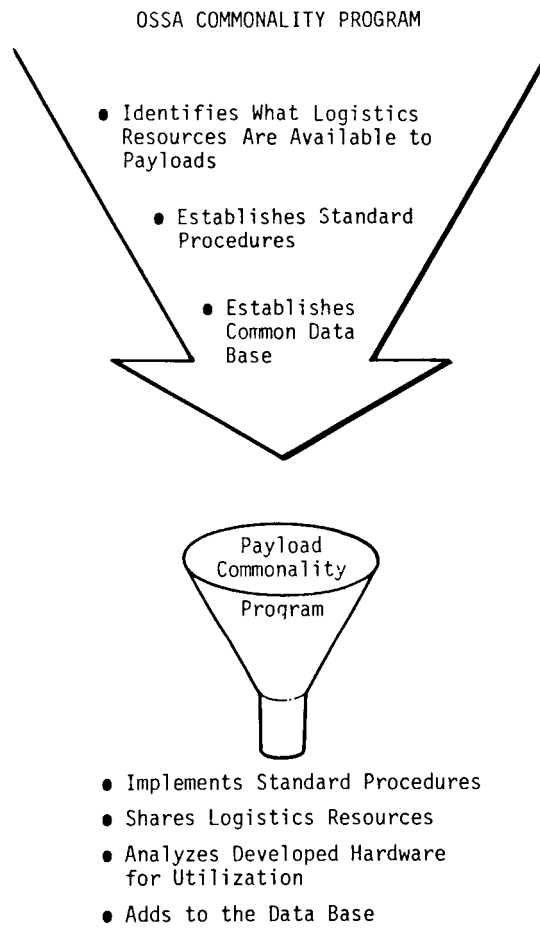


Fig. 4-1 Commonality Program Interface

#### 4.2.1 Maintenance Plan

This plan provides the integrated planning and analysis process which addresses the requirement to assess the design as it relates to maintenance and the development of maintenance requirements.

#### 4.2.2 Technical Data and Documentation Plan

This plan provides the technical data and the documentation planning which prescribes general procedures, terms, and conditions for planning, preparation, and delivery of technical data required for training, maintenance, and operational support of equipment.

#### 4.2.3 Supply Support Plan

This plan describes the processes for meeting the spare and repair parts requirements. The plan will specifically address provisioning procedures and requirements. Also, the plan will address the use of the LSA process and the maintenance plan in the development and definition of spare and repair parts requirements.

#### 4.2.4 Logistics Facilities Plan

This plan provides the facilities planning which includes the facilities and equipment required to support maintenance, training, storage, and installation and checkout.

#### 4.2.5 Packaging, Handling, Storage, and Transportation Plan.

This plan addresses the procedures and resource requirements necessary to insure that all system equipment and support items are transported, preserved, packaged, stored and handled properly.



#### 4.2.6 Logistics Support Personnel and Training Plan

This plan contains qualitative and quantitative information for use by responsible management agencies to identify maintenance personnel requirements by numbers, skills, other qualifications, and training requirements.

#### 4.2.7 Support Equipment Plan

This plan identifies and provides common support equipment and software requirements necessary to accommodate organizational, intermediate, and depot-level maintenance.

#### 4.2.8 Logistics Information System Plan

This plan addresses those data elements, files, reports, and associated hardware and software that provide for status, historical data, trends, management visibility, accountability, performance evaluation, control and allocation of logistics resources.

### 4.3 LOGISTICS INFORMATION SYSTEM (LIS)

The LIS is designed to serve as a comprehensive system which will provide real time status of significant logistics activities to determine and evaluate the supportability of OSSA payload programs. The LIS is key to the coordination of logistics activities within OSSA. The elements of the LIS are described below and shown in Figure 4-2.

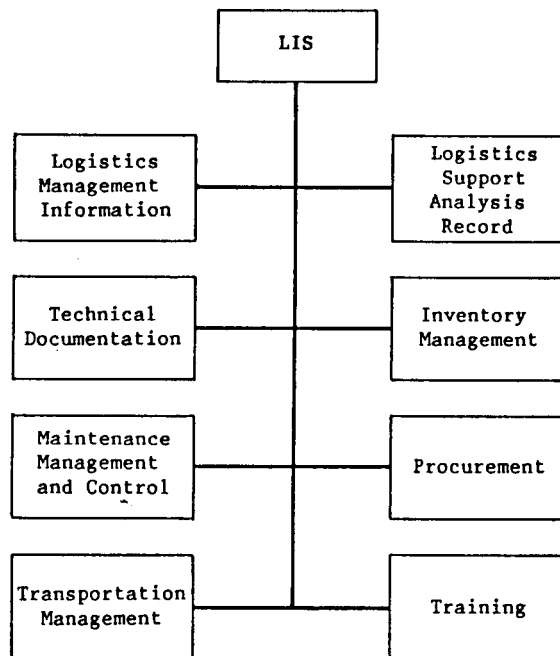


Fig. 4-2 Logistics Information System (LIS) Components

#### 4.3.1 Logistics Management Information System (LMIS)

The LMIS provides visibility and evaluates the performance of OSSA payload program logistics processes. The specific types of information which are included in the LMIS are cost tracking, applicable logistics support scheduling, and technical performance of logistics elements. The LMIS provides the capability to summarize logistics parameters and elements for management visibility and tracking.

#### 4.3.2 Logistics Support Analysis Record (LSAR)

The data developed during the Logistics Support Analysis (LSA) process will be documented and input to an automated data base called the LSAR data base. The LSA process is the analysis from which source data is derived for maintenance technical documentation, maintenance training, personnel requirements, provisioning documentation, support equipment requirements, etc. This analytical process is described in MIL-STD-1388-1A, Logistic Support Analysis. The format for entering the data into the logistics support data base is defined in MIL-STD-1388-2A, DOD Requirements for a Logistic Support Analysis Record. Figure 4-3 shows the inputs to and the outputs from the LSAR data base.

#### 4.3.3 Technical Documentation

The technical documentation component of LIS will provide the capability to maintain current technical data. This technical data, for maintenance and repair, will be used to support on-orbit and ground operations, maintenance, training, and logistics support operations.

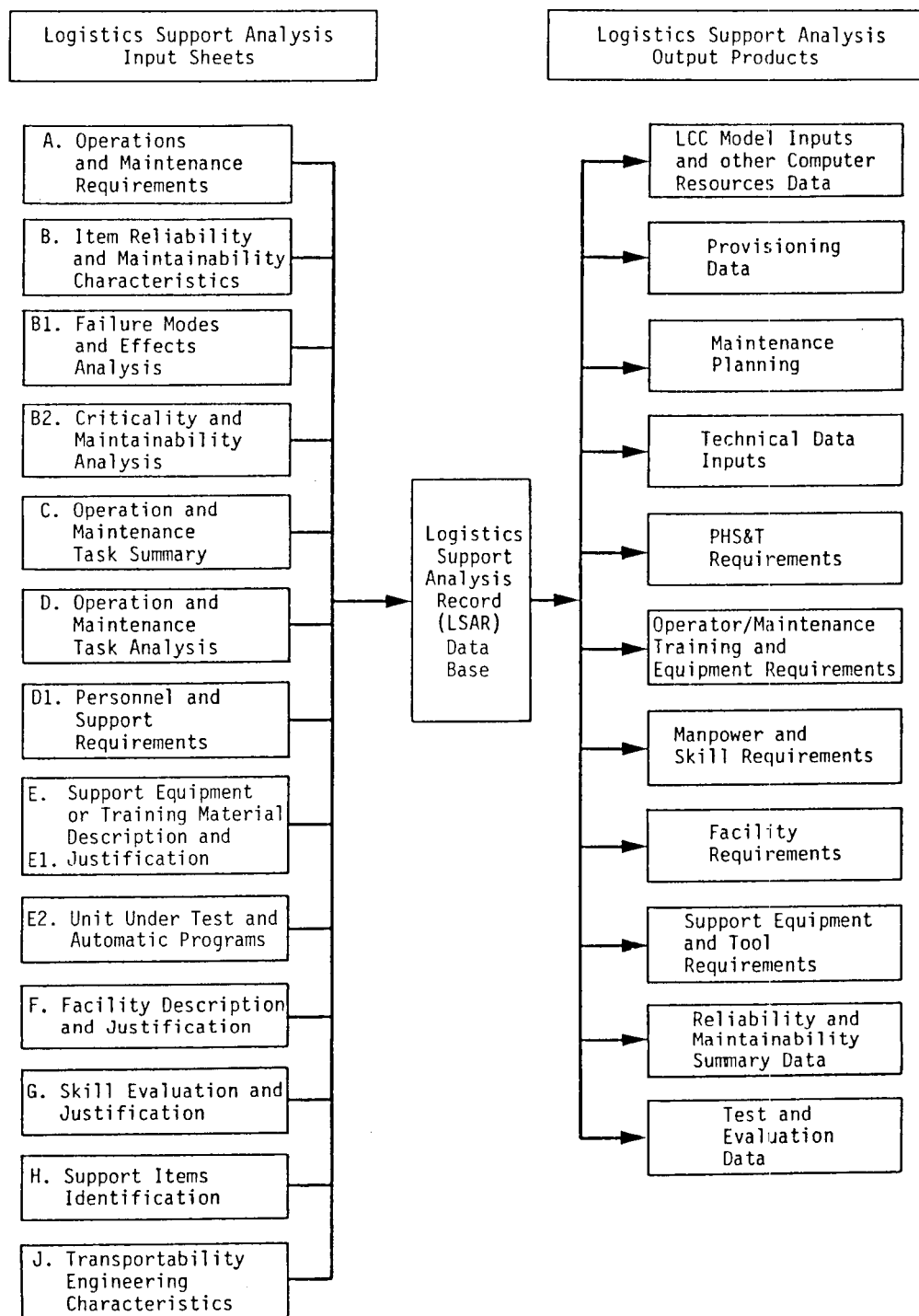


Fig. 4-3 LSAR Inputs/Outputs

#### 4.3.4 Inventory Management System

OSSA will establish a single standard automated inventory management system for all OSSA payloads. The inventory management system is the means by which all OSSA assets (ground and on-orbit) will be identified, integrated and controlled. The inventory management system will organize, manage, and control the spares, equipment, consumables and other materials needed to ensure the support of all OSSA payloads. The inventory management system is responsible for predicting OSSA payload support requirements and assuring the availability and serviceability of those items when needed. Remote terminals will be located at appropriate supply, maintenance, and management locations. The standard inventory management system will provide asset visibility across OSSA and other NASA programs to facilitate utilization of existing assets.

#### 4.3.5 Maintenance Management and Control

The Maintenance Management and Control component of the LIS will provide status information on all maintenance actions both on ground and on-orbit. ORUs will be tracked from on-orbit through all maintenance shops and off-site depots.

#### 4.3.6 Procurement

The procurement component of LIS will be used to track the purchase of logistics support resources. Included as part of this component are:

purchase order contract generation, purchase requisition/purchase order identification tracking and status.

#### 4.3.7 Transportation Management

The automated transportation system will contain documentation of packaging information, shipping constraints (size and weight), traffic management transferability information, handling criteria, environmental requirements, classification, and transportation route restrictions.

#### 4.3.8 Training

The training component tracks maintenance and repair course offerings along with the personnel who are required to take the courses. The automated training system may also schedule personnel for certification and recertification. Certification and recertification of personnel will be tracked and status of the skills available will be provided.

#### 4.4 REPAIR LEVEL ANALYSIS (RLA)

A Repair Level Analysis (RLA) procedure will be established to recommend repair levels for orbital replaceable units (ORUs), assemblies, and subassemblies. The repair level decision will be based upon total support costs within operational and technical constraints over the system design life. The RLA will form the basis for an item's recommended optimum repair level; repair versus discard-at-failure decision; repair parts provisioning; Source, Maintenance, and Recoverability (SMR) coding; and maintenance

planning. The results of the RLA are to be available prior to SMR coding of spares and repair parts. This is a minimum requirement to ensure that the SMR coding and provisioning actions are based upon the best information available. Certain long-lead items will be an exception and will be provisioned prior to completion of the RLA. Figure 4-4 shows the inputs and outputs of the RLA process. The analysis will be performed to the depth required to ensure that the ground and flight systems operational and maintenance requirements are satisfied and that the acquisition of resources is justified. RLA will determine the repair locations for each ORU, assembly, and subassembly. Existing RLA software will be modified and user manuals prepared to standardize and facilitate this analysis for all OSSA payloads.

#### 4.5 REPAIR PARTS SCREENING

Repair parts will be screened by the Defense Logistics Services Center (DLSC) to prevent the entry of items into the NASA inventory that may be available in other Government inventories. Specific procedures will be developed and documented.

#### 4.6 SOURCE, MAINTENANCE AND RECOVERABILITY (SMR) Coding

OSSA will standardize SMR coding procedures for all OSSA payloads. The coding is necessary to devise a maintenance and replenishment strategy for equipment components. Figure 4-5 shows the SMR codes.

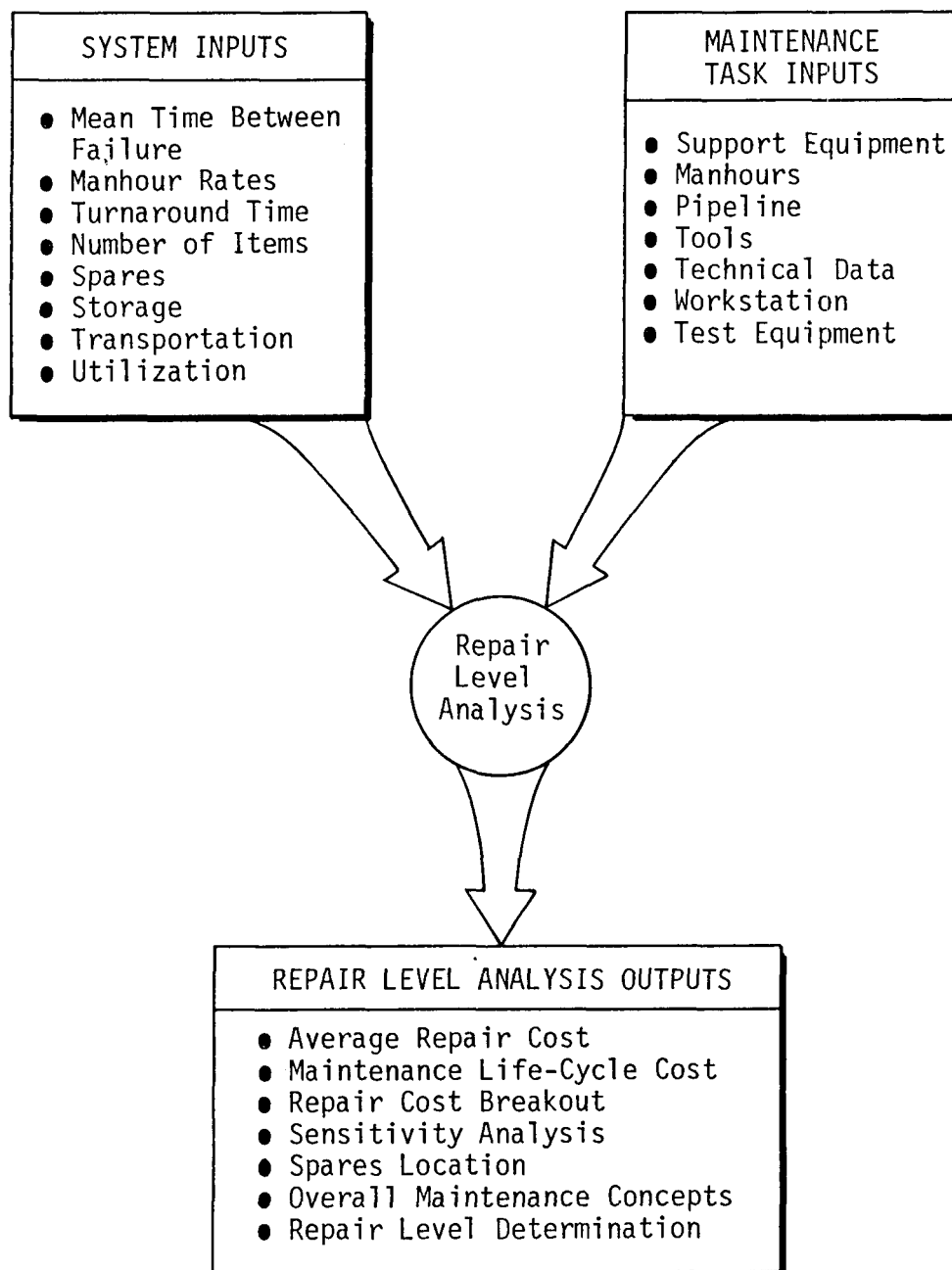


Fig. 4-4 Repair Level Analysis Process



Source			Maintenance		Recoverability
			Use	Repair	
1st Position	2nd Position		3rd Position	4th Position	5th Position
P    Procurable	A	Stocked	O    Replace at Organizational Levels	Z    No Repair	Z    Nonrepairable Condemn at Any Authorized Level
	B	Insurance		B    No Repair Condition	
	E	GSE		C    No Repair Clean Only	O    Repairable Condemn at Organizational Level
K    Component of a Repair Kit	F	Intermediate Kit	F    Replace at Intermediate Levels	O    Repair at Organizational Level	F    Repairable Condemn at Intermediate Level
	D	Depot Kit		F    Repair at Intermediate Levels	D    Repairable Condemn at Depot Level
	B	In Both Kits			
M    Manufacture	O	Organizational	D    Replace at Depot Levels Only	D    Repair Limited: Intermediate Overhaul: Depot	L    Repairable Condemn at Technology Repair Center
	F	Intermediate		L    Repair Depot Level Only	A    Special Handling
	D	Depot			
A    Assembly			D    Replace at Depot Levels Only		
X    Nonstocked	A	See NHA	D    Replace at Depot Levels Only		
	B	Reclamation from IM			
	C	Drawings Obsolete, etc.			

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Fig. 4-5 Source, Maintenance, and Recoverability (SMR) Codes

#### 4.7 TECHNICAL DATA PACKAGES

Standards will be established for the acquisition of technical data packages. Complete data packages are required from the manufacturers if a NASA depot or another vendor is to be considered as a repair alternative. Acquisition of complete technical data packages will eliminate total reliance on a single vendor for repair. It will also eliminate the associated uncontrolled cost, time to repair, and the risk of loss of repair capability. Technical data packages consist of a wide range of text, drawings, graphics and other forms of information to include: operations and maintenance documentation; diagrams/schematics; illustrated parts breakdown; drawings; computer program documentation; and specifications.

#### 4.8 FACILITIES

OSSA will consolidate logistics support facility requirements for all OSSA payloads and ensure that these facilities are provided in the most cost effective manner. The logistics support facilities are defined as the buildings necessary to house the maintenance support equipment, Orbital Replaceable Units (ORUs), spares, consumables, ORU repair shops, experiment and calibration laboratories, waste management facilities, data management systems, classrooms and training devices for operations/maintenance training, simulators and services to support these facilities. Facility functions are shown in Fig. 4-6.

Each OSSA payload program will be responsible for identifying its logistics support facility requirements to OSSA in a standard format.

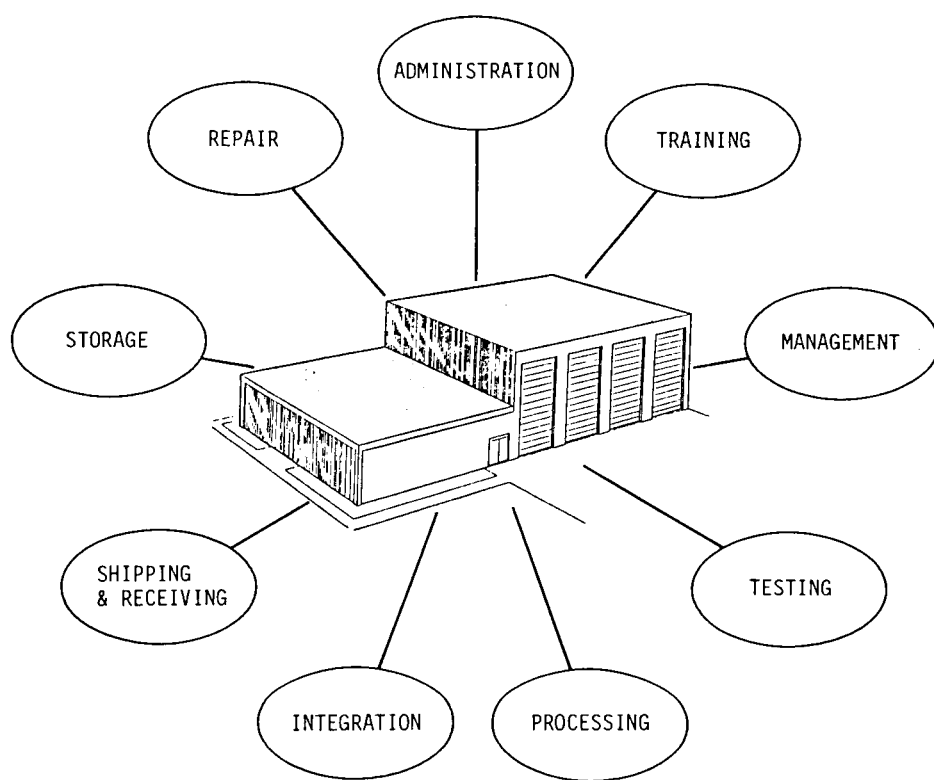


Fig. 4-6 Facility Functions

Support requirements that do not lend themselves to incorporation into a common NASA depot, either for cost or technical reasons, will be identified. Factors to consider include but are not limited to: completeness of technical data packages delivered to the government; cost of warranties versus government depot costs; and vendor versus government ownership of ORU peculiar test equipment.

OSSA will establish a standard format for identifying the logistics facility requirements of the payload programs, consolidate these requirements into the total OSSA logistics support facility requirements, and then provide these facilities in a cost effective/timely manner. This may involve utilization of existing NASA/DoD facilities, incorporation into planned NSTS/SSP facilities, development of OSSA peculiar facilities, or a combination of the above.

#### 4.9 PACKAGING, HANDLING, STORAGE AND TRANSPORTATION (PHS&T)

Procedures will be established to standardize PHS&T practices across OSSA programs. This standardization is essential if a central storage/repair facility is to be developed. It will also baseline the most efficient/cost effective procedures that are utilized in existing NASA programs. Figure 4-7 shows the PHS&T analytical process.

#### 4.10 OPERATIONAL COST MODEL

OSSA will designate a single standard operational cost model for all OSSA payloads. The operational cost model is used as a management tool to

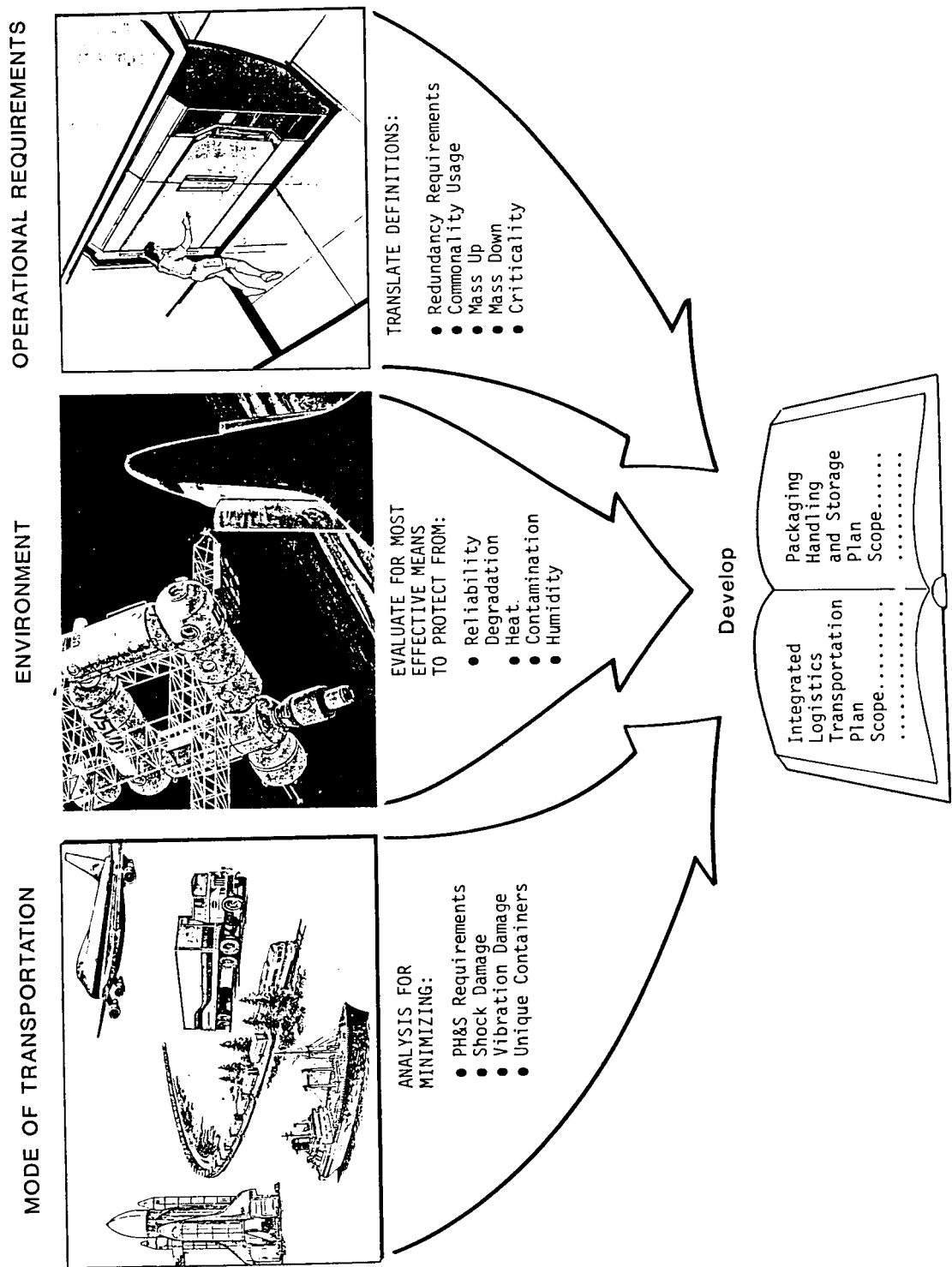
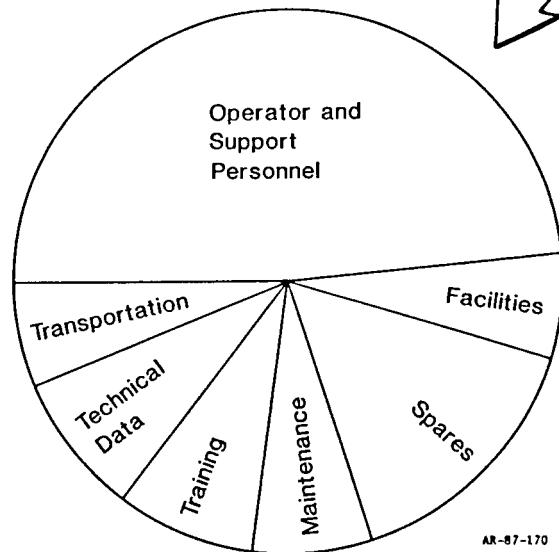
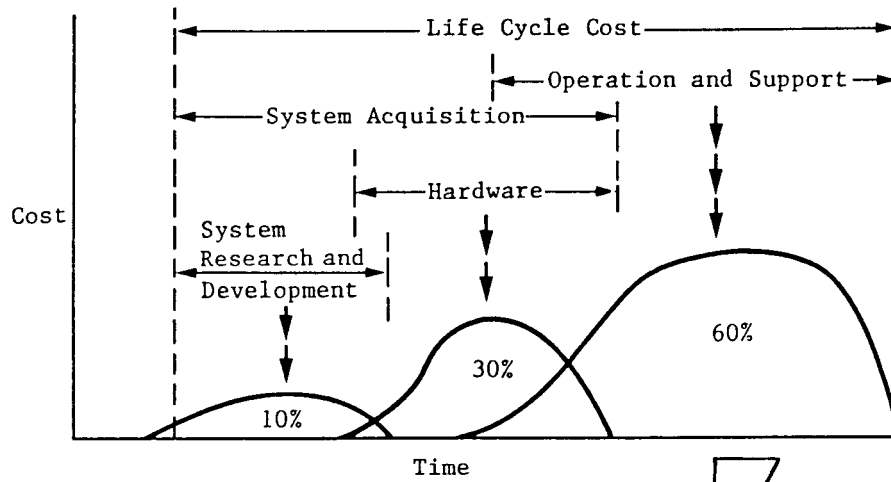


Fig. 4-7 PHS&T Analytical Process

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facilitate operational cost analysis. The operational cost analysis will commence early in the system development process to estimate operations and support costs. The cost model will identify operations and support cost drivers and perform sensitivity analysis to develop the optimum balance between cost and effectiveness. The initial operations and support cost drivers and estimates will be inputs to the systems engineering process to ensure that design is optimized to minimize operations and support and life cycle costs. Operational cost estimates are revised and improved as programs progress and input data becomes more accurate. Standardization of an operational cost model will provide useful, timely cost information to OSSA managers; permit meaningful comparisons between OSSA payload programs; and facilitate budget preparation. Figure 4-8 shows a typical life cycle and operations and support cost breakout.



Operations and Support  
Cost Breakout

Fig. 4-8 Operations and Support Cost

## 5.0 SUMMARY

This document has formulated an OSSA logistics strategy that will ensure OSSA payload supportability at an affordable life-cycle cost. In Section 2 the logistics strategy, objectives, and logistics organization and functions were described. Section 3 discussed the implementation of the strategy. The implementation of the OSSA logistics strategy is supported by the issuance of an OSSA logistics policy letter and the formulation of an OSSA level logistics organization. The organization will interface with the payload program logistics organizations and other NASA program logistics organizations. The implementation of the strategy is phased, with Phase I the data collection and analysis phase, Phase II the application phase, and Phase III the maintenance phase. This phasing provides a methodology for developing the strategy. It is a systematic approach to the development and operation of the OSSA Integrated Logistics Support Program. Section 4 details the specific logistics plans, procedures, and resources that will be analyzed and developed for commonality application. The results of the logistics studies and analyses will be incorporated into a series of OSSA-level logistics plans. Conducting the appropriate logistics studies and analyses and developing the OSSA-level logistics plans is the next step in developing and establishing an OSSA Integrated Logistics Support Program. The ILS Program will enable OSSA to come to grips with logistics support costs and ensure supportability of all OSSA payloads. The logistics strategy provides an opportunity to make our Space Science Programs affordable.



## GLOSSARY

Commonality - The use of identical or similar hardware, software, standards, and technical approaches to satisfy multiple sets of functionally similar requirements.

Depot - Facility for performing maintenance on material requiring major overhaul or a complete rebuild of parts, assemblies, subassemblies, and end-items, including the manufacture of parts, modifications, testing, and reclamation as required.

Integrated Logistics Support (ILS) - A disciplined approach to the activities necessary to: (a) cause support considerations to be integrated into system and equipment design; (b) develop support requirements that are consistently related to design and to each other; (c) acquire the required support; and (d) provide the required support during the operational phase at minimum cost.

Integrated Logistic Support Management Team (ILSMT) - A management group responsible for monitoring the ILS process for a given system or payload to ensure adherence to the requirements in the ILS Plan.

Integrated Logistic Support Plan (ILSP) - The plan developed to incorporate all elements of ILS for the life of a system.

Inventory Management System (IMS) - The means by which assets are identified and controlled. The system organizes, manages, and controls the spares, equipment/consumables and other materials needed to ensure the support of systems/subsystems in accomplishing their mission.

Life Cycle Cost (LCC) - The total cost of a system from its inception to its retirement.

Logistics Management Information System (LMIS) - A system that provides the essential management visibility to ensure timely and cost-effective accomplishment of logistics requirements. The main elements are logistics schedules and status reports which will provide a basis for evaluating logistics performance.

Logistic Support Analysis (LSA) - The selective application of scientific and engineering efforts undertaken during the acquisition process, as part of the system engineering and design process, to assist in complying with supportability and other ILS objectives.

Logistic Support Analysis Record (LSAR) - That portion of LSA documentation consisting of detailed data pertaining to the identification of logistic support resource requirements of a system/equipment.

Long-lead Item - An item, which, because of its complexity of design, complicated manufacturing process, or limited production capacity, causes production or procurement cycles which would preclude timely or adequate delivery, if not ordered in advance of normal provisioning.

Maintainability - The measure of the ability of an item to be retained in or restored to specified condition when maintenance is performed by personnel having specified skill levels, using prescribed procedures and resources, at each prescribed level of maintenance and repair.

Maintenance - All action taken to retain materiel in or to restore it to a specified condition. It includes: inspection, testing, servicing, classification as to serviceability, repair, rebuilding, and reclamation.

Mission Need Statement - A clear, concise description of a specified task, its requirements, and its purpose.

Operations and Support (O&S) Costs - The cost of operation, maintenance, and follow-on logistics support of the end items and their associated support systems.

Orbital Replaceable Unit (ORU) - Any assembly that can be removed and replaced as a unit from an on-orbit system.

Packaging, Handling, Storage, and Transportation (PHS&T) - The resources, processes, procedures, design considerations and methods to ensure that all system equipment and support items are preserved, packaged, handled, and transported properly. This includes environmental considerations and equipment preservation requirements for short and long term storage, and transportability. This is one of the principal elements of ILS.

Parts Screening - Process of assigning National Item Identification Numbers (NIINs) to items to prevent duplicate items from entering the defense supply system.

Phase A - Preliminary analysis to identify and explore alternate concepts to satisfy a validated need.

Phase B - The definition phase when selected candidate solutions are refined through extensive study and analysis.

Phase C - The design phase which includes the detailed definition of the final objectives and project concept.

Phase D - The development/operations phase which covers final hardware design and development, fabrication, test, and project operations.

Provisioning - The process of determining and acquiring the range and quantity (depth) of spares and repair parts, and support and test equipment required to operate and maintain an end item of materiel for an initial period of service.

Reliability - The duration of probability of failure-free performance under stated conditions.

Repair Level Analysis (RLA) - A process for recommending repair levels of units, assemblies, and subassemblies which will accrue minimum total support costs within operational and technical constraints over the system design life. It forms the basis for assigning repair level; repair versus discard-at-failure decision; repair parts provisioning; and Source, Maintenance, and Recoverability (SMR) coding, maintenance planning, and documentation.

Repair Parts - Those support items that are an integral part of the end item or system which are coded as nonreparable.

Source, Maintenance, and Recoverability (SMR) Codes - Uniform codes assigned to all support items to convey maintenance and supply instructions to the various logistics support levels. They are assigned based on the logistic support planned for the end item and its components. The uniform code format is composed of three, two character parts; Source Codes, Maintenance Codes, and Recoverability Codes in that order.

Spares - Those support items that are an integral part of the end item or system which are coded as repairable.

Support Requirements Analysis (SRA) - An analysis accomplished during the system design to establish logistics support requirements. The analysis is a step-by-step process of predicting operational and maintenance activities, and defining and documenting the required resources.

Supply Support - All management actions, procedures, and techniques used to determine requirements to acquire, catalog, receive, store, transfer, issue, and dispose of secondary items. This includes provisioning for initial support as well as replenishment supply support. This is one of the principal elements of ILS.

Supportability - The degree to which system design characteristics and planned logistics resources, including manpower, meet system readiness and utilization requirements.

Support Equipment - All equipment required to support the operation and maintenance of a system. This includes associated multiuse end items, ground-handling and maintenance equipment, tools, test equipment, and automated test equipment. It includes the acquisition of logistics support for the support and test equipment itself. This is one of the principal elements of ILS.

Sustaining Engineering - The on-going engineering process of maintaining and operating a system once it is deployed. This process continues throughout the life of the system.

Test, Measurement, and Diagnostic Equipment (TMDE) - Equipment used to determine the operability of system hardware and support equipment.

Technical Data Package - Recorded information regardless of form or character (e.g., manuals, drawings) of a scientific or technical nature for a given system. Computer programs and related software are not technical data; documentation of computer programs and related software are. Also excluded are financial data or other information related to contract administration. This is one of the principal elements of ILS.

Transportability - The inherent capability of materiel to be moved with available and projected transportation assets to meet established schedules.